

I. Rejections of Claims 1-4, 7-13 and 18-22

Claims 1-4, 7-13 and 18-22 were rejected under 35 U.S.C. §103(a) as obvious over U.S. Patent 5,875,631 to Smith ("Smith") in view of U.S. Patent 5,410,232 to Lee ("Lee"). Applicants respectfully traverse.

The Office action stated

with reference to claims 1-4, 11, 13, 20, and 21, Smith teaches

a control system (10), being operated by a joystick mechanism, having a pair of overcenter variable displacement pumps (12) and (13), each of which has a flow control element(21) and (22) disposed to control direction and flow rate of liquid output from the associated pump and a double acting actuator connected to the flow control element and having a spring disposed in each of first and second actuating chambers (28) and (29) to bias the flow control element to a centered zero output position.

The control system includes a first conduit (36) communicating a supply conduit (33) with the first chambers, a first orifice (37) disposed in the first conduit (36), a second conduit (38) communicating the supply conduit with the second chambers (28) and a second orifice (39) disposed in the second conduit.

A forward control valve (41) is disposed between a tank (32) and the first conduit (36) downstream of the first orifice (37). The forward control valve (41) has a closed position blocking the first conduit (36) from the tank (32) and is movable to establish a variable orifice communicating the first conduit with the tank (a similar arrangement is used for the reverse control valve).

A lever device, joystick, is provided for actuating each of the forward and reverse control valves independently of the other (see column 2, lines 17-61).

(page 2, section 2;). Additionally, the Office action stated that

with further reference to claims 1, 11, and 21, as well as claims 7-10, 12, 18, 19, and 22 Lee teaches

a spherical motor (10) has a plurality of fluid bearing mechanisms (33) mounted in the stator (12) for supporting and permitting rotation of the rotor (18) therein.

....Each fluid bearing mechanism (33) discharges a jet of fluid, such as liquid or gas, at respective pressures P1 and P2 (see column 6, lines 52-54). The pressures P1 and P2 can be controlled by a fluid flow control valve (34).

Fluid at constant pressure Ps is caused to flow through two paths (35a) and (35b), each comprising a constant restriction R in series with a variable restriction (see column 6, line 61-column 7, line 3).

An orientation sensing system (40) for permitting non-contact position and direction measurement, of any spherical body, of the combined roll, yaw, and pitch motion, eliminates friction and stiction, and exhibits a relatively low inertia (see column 7, lines 28-35).

Further it is disclose the interaction of the orientation sensing system (40) and the computer system (80) (see figure 3).

(page 3).

However, even if, for the sake of argument that Smith and Lee were combined, the present invention would not be obvious for the following reasons:

A. Present Invention

The present invention, as defined in claim 1, is directed to an input device for providing information with a data processing system, comprising:

- means for containing fluid medium in a hermetically sealed manner;
- means for communicating said fluid medium going out from or coming into said containing means;
- means for restricting flow of said fluid medium passing through said communicating means;
- means for applying pressure to said fluid medium responsive to direct or indirect inputs from an operator so as to change volume of said fluid medium contained in said containing means, thereby said fluid medium is passed through said communication means;
- means for generating control information responsive to operation of said pressure applying means by the operator, said generated control information being input to said data processing system; and

means for generating feedback information responsive to said control information input from said control information generating means, said feedback control information being fed to said restricting means;

whereby said restricting means restricts the flow of said fluid medium through said communication means responsive to said feedback control information fed by said feedback information generating means.

Because of the above structure, an input device of the present invention can change the operation feeling in accordance with the feedback control information as explained below.

In the present invention, the pressure applying means applies pressure to fluid medium by changing volume of the fluid medium contained in the containing means. When pressure is applied, the fluid medium flows out through the communication means. As a flow resistance in the communication means becomes larger, the fluid medium becomes more difficult to flow out from the containing means, resulting in a higher resistance force against operation by the operator, that is, resulting in heavier operation feeling.

The control information generating means generates control information in response to an operation to the pressure applying means by an operator. The feedback information generating means generates feedback control information in response to the control information, and supplies the feedback control information to the restricting means which restricts the flow of the fluid medium in the communication means. Thus, the flow resistance in the communication means changes in accordance with the feedback control information. As mentioned above, the operation feeling changes in accordance with the flow resistance in the communication means. Thus, it is possible to change the operation feeling in accordance with the feedback control information generated by the feedback information generating means. For example, if a large change in the inclination angle or a rapid movement of the lever 51 causes a correspondingly large change in the electrical displacement value of the voltage driven actuator as described in page 10, lines 13 to 16 of the instant specification, it will result in heavier operation feeling of the lever 51 due to a large flow resistance of the restrictor pipe 30.

B. The Smith Patent

Smith discloses a control system which hydraulically controls the machine propelling elements (18, 19) in response to an operation of the joystick, the lever (66, 68) by simply changing openings of the control valves (41, 42). (see column 2, lines 17-41 and 48-52 and column 3, lines 15-21).

C. The Smith Patent and the Present Invention

Although the Office action stated that "Smith fails to teach the usage of such device for inputting data to a computer, but ..." (page 3, lines 5), the difference between the present invention and Smith are more than the lack of description about usage. Smith does not teach the following elements of the present invention:

- applying pressure to the fluid medium by changing a volume of the containing means in accordance with an operation by an operator;
- generating the control information in accordance with the control information; and
- restricting the flow of the fluid medium in the communication means by the restricting means in the communication means by the restricting means in accordance with the feedback control information.

Smith's control system controls the machine propelling elements (18, 19) in response to an operation of the joystick, the lever (66, 68) by simply changing openings of the control valves (41, 42). Because of the above-mentioned differences, even if the openings of the control valves (41, 42) are changed to cause a change in flow resistance in the conduit, the operation feeling of the joystick is not changed in Smith's system.

On the other hand, as explained above, in the present invention, operation feeling of the device of the present invention changes in accordance with the feedback control information. Such effect is not even suggested in Smith. A mere obvious try is not enough to establish prima facie case of obviousness; there must be a reasonable expectation of success. *Amgen, Inc. v. Chugai Pharmaceutical Co. Ltd.*, 927 F.2d 1200 (Fed. Cir. 1991). If it is not shown that the prior art gives a

reason or motivation to make the claimed compositions, then there is no *prima facie* case and the Applicant should prevail. *In re Grabiak*, 729 f.2d 729 (Fed. Cir 1985).

In short, the Smith does not teach every element of the present invention and also failed to give any suggestion to modify Smith's system to the device of the present invention, the present invention is not obvious over Smith.

D. Combination of Smith and Lee Does Not Lender The Present Invention Obvious

Lee discloses a spherical motor having a plurality of fluid bearing mechanisms (see column 6, lines 38-41). However, Lee also fails to teach the above three elements which Smith fails to teach. Neither does Lee suggest the effect of the present invention explained above. Therefore, even if Smith were combined with Lee, such combination could not render the present invention obvious. Applicants respectfully request that the rejection be withdrawn.

II. Rejections of Claims 6 and 15

Claims 6 and 15 were rejected under 35 U.S.C. §103(a) as obvious over Smith in view of Lee and Klauk. Applicants respectfully disagree.

Klauk discloses a piston for controlling fluid pressure and also failed to disclose the above-mentioned elements of the present invention. Therefore, even if Klauk were combined with Smith and Lee, the present invention would be still non-obvious over the prior art references.

Therefore, the present invention is not obvious over Smith in view of Lee and Klauk. Applicants respectfully request that the rejections be withdrawn.

III. Conclusion


In view of the above amendment and remarks, Applicants submit that all of rejections in the Office Action have been overcome and all claims are now in condition for allowance, early and favorable notice of which would be appreciated.

In the event that all of the claims are not allowed, Applicants specifically request a personal or telephonic interview to discuss any remaining issues and thereby accelerate the eventual allowance of all of the present claims.

No fee is believed to be due for this submission. Should any fee be required in connection with or as an adjunct to this submission, please charge it to Deposit Account No. 16-1150.

Respectfully submitted,

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